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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/679,874	10/07/2003	Hideo Daimon	117405	3838

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EXAMINER	
WILLIAMS, ALEXANDER O	

ART UNIT	PAPER NUMBER
2826	

DATE MAILED: 08/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/679,874	DAIMON ET AL.	
	Examiner	Art Unit	
	Alexander O Williams	2826	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 May 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) *11-16* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *12/29/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Serial Number: 10/679874 Attorney's Docket #: 117405
Filing Date: 10/7/2003; claimed foreign priority to 10/11/02; 11/7/02; 2/25/03; 2/25/03

Applicant: Daimon et al.

Examiner: Alexander Williams

Applicant's election of Group I (claims 1 to 10), filed 5/27/04, has been acknowledged.

Applicant's arguments have been acknowledged and are not found to be persuasive. In the examination of claims Group I (claims 1 to 10) the Examiner would be interested in searching for the final structure of the semiconductor device claimed. In the examination of Group II (claims 11 to 16) the Examiner would be interested in the step claimed to achieve the semiconductor device claimed. Therefore, the two Groups would require a search in different art units and class. The Examiner would be unduly burdened to evaluate all claims fully on their merit at the full time.

Each of the Groups have searches in different art units and classes that would unduly burden the Examiner to evaluate all claims on their merit at the full time. This is not found persuasive because of the reasons detailed in the last Office action.

The requirement is still deemed proper and is therefore made FINAL.

This application contains claims 11-16 drawn to an invention non-elected with traverse. A complete response to the final rejection must include cancellation of non-elected claims or other appropriate action (see 37 CFR § 1.144 & MPEP § 821.01).

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The disclosure is objected to because of the following informalities: On page 3, line 13, "grass" should probably be –glass–. On page 4, line 17, after "bonding" a period --.-- should replace the "," comma .

Appropriate correction is required.

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

The use of the trademark throughout the specification have been noted in this application. It should be capitalized wherever it appears and be accompanied by the generic terminology.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

The drawings are objected to because unclear of the structure claimed. Correction is required.

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the member is a quartz ferrule, in claim 8 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not

be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claims 1 to 10 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, it is unclear and confusing to what is meant and what shows "A member having **a metal layer**, the member mainly composed of one of silicon and silicon oxide, comprising: a plurality of overhanging depressions created on a surface of the member; an anchor layer formed by filling the depressions; and **a metal layer** formed on the anchor layer." Is the "member having a metal layer" and "the metal layer on the anchor layer" the same layer?

Any of claims 1 to 10 not specifically addressed above are rejected as being dependent on one or more of the claims which have been specifically objected to above.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 3, 4, 6, 7 and 10, **insofar as they can be understood**, are rejected under 35 U.S.C. § 102(e) as being anticipated by Frye et al. (U.S. Patent # 5,481,205).

1. Frye et al. (figure 1) show a member **(20)** having a metal layer **22,23**, the member mainly composed of one of silicon and silicon oxide **21**, comprising: a plurality of overhanging depressions **(see column 3, lines 50 to column 4, lines 10)** created on a surface of the member; an anchor layer **(a NiP layer 23)** formed by filling the depressions; and a metal layer **22** formed on the anchor layer.

(See column 4, lines 10-50) In order to fabricate the testing substrate 20 with its corrugated wiring areas 30, the following procedure can be used. A layer of initial silicon dioxide (not shown) is thermally grown under dry conditions at a temperature of approximately 950.degree. C. on an initially planar (not shown) top surface of the silicon substrate 20, typically to a thickness of approximately 0.2 .mu.m. The top surface is the (100) crystal plane of silicon. Then a layer of photoresist, typically made of materials as manufactured by Shipley, is spun-on over the top (planar) surface of the thermally grown silicon dioxide layer, typically to a thickness of approximately 0.5 .mu.m. Next, the resist layer is patterned, at the future corrugated wiring areas 30, by a standard photolithographic process, whereby there remains at each of these areas a set of parallel stripes of resist each having a width of approximately 2.0 .mu.m, and the distance between nearest approach of adjacent stripes being approximately 9.2 .mu.m--that is, the width of each of the thus exposed stripe shaped areas of the silicon dioxide layer also being approximately 9.2 .mu.m. Next, using the patterned resist as a protective mask against etching, the exposed silicon dioxide is anisotropically (vertically) etched with a standard buffered solution of HF, whereby the silicon dioxide layer becomes patterned into stripes and underlying stripes of silicon of the substrate 20 become exposed. The resist layer is then removed by a standard technique. Next, using the silicon dioxide stripes as an etch mask, the desired V-grooves are etched into the silicon substrate, typically by using an approximately 2 normal solution of KOH at approximately 70.degree. C. Then the silicon dioxide stripes are removed, typically again by means of the buffered solution of HF. Next, the silicon dioxide layer 21 is grown, again typically at about

950.degree. C. by means of a dry process. Then, metallic aluminum is sputter-deposited everywhere on the top surface of the silicon dioxide layer 21, and is patterned to form the wiring layer 22, in accordance with the desired wiring pattern for the testing substrate 20. Finally, the thus patterned wiring layer 22 is everywhere coated with the durable layer 23, for example, by means of electroless plating of phosphorus nickel from a plating solution containing nickel and phosphorus (e.g., hypophosphite) ions.

As to claims 3, 6, and 7, note that the specification contains no disclosure of either the critical nature of the claimed dimensions or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen dimensions or upon another variable recited in a claim, the Applicant must show that the chosen dimensions are critical. In re Woodruff, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

3. A member having a metal layer according to Claim 1, Frye et al. show wherein the number of the depressions is 1 to 4 per linear 15 um on the surface of the member.
4. A member having a metal layer according to Claim 1, Frye et al show wherein the anchor layer is composed of **Ni** and at least one of **P** and B **(see column 5, lines 36-38).**
6. A member having a metal layer according to Claim 1, Frye et al. show wherein a thickness of the anchor layer **23** is at least 1 um.
7. A member having a metal layer according to Claim 1, Frye et al. show wherein a thickness of the metal layer is at least 50 nm.
10. A member having a metal layer according to Claim 1, Frye et al. show wherein the member is composed of silicon **20** and further comprises an oxide layer **21** on a surface thereof.

Claims 1 to 7 and 10, **insofar as they can be understood**, are rejected under 35 U.S.C. § 102(e) as being anticipated by Oda et al. (U.S. Patent # 6,670,208 B2).

1. Oda et al. (figures 1 to 31B) specifically figures 6A to 6F show a member **(silicon wafer die)** having a metal layer **Au layer** , the member mainly composed of one of silicon and silicon oxide **(silicon)**, comprising: a plurality of overhanging depressions **11** created on a surface of the member; an anchor layer **(a Ni--P layer)** formed by filling the depressions; and a metal layer **Au layer** formed on the anchor layer.

(From column 16, line 65 to column 17, line 17) The same process as that of the first embodiment, namely, the steps of FIGS. 6A to 6F are used, as they are to fabricate the silicon etch pit. After the step of FIG. 6F, an Au layer having the thickness of 5 .mu.m is formed on the copper film 12 by use of the electrolytic plating process. Moreover, a Ni layer having the thickness of 5 .mu.m is formed on the Au layer. Then, the Au layer having the thickness of 5 .mu.m is formed on the Ni layer. In such a layer structure, there was a case that the lamination plating film is thinly formed near vertex portions corresponding to the concave portion of the silicon wafer die. In this case, when the plating lamination is connected to the substrate and the mirror element is peeled from the silicon wafer, vertex portions of a mirror element 1' are damaged as shown in FIG. 30A. In order to cope with such a problem, in addition to use of a Ni--P layer, the lamination film structure is changed to 1 .mu.m Au/0.2 .mu.m (Ni-p)/5 .mu.m Ni/0.2 .mu.mP/5 .mu.m Au. Accordingly, the film formation property becomes uniform in the entire concave portion. In this case, the mirror element 1 can be mounted on the substrate without any damage to the vertex portions of the mirror element 1, as shown in FIG. 30B.

As to claims 2, 3, 6, and 7, note that the specification contains no disclosure of either the critical nature of the claimed dimensions or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen dimensions or upon another variable recited in a claim, the Applicant must show that the chosen dimensions are critical. In re Woodruff, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

2. A member having a metal layer according to Claim 1, Oda et al. show wherein a depth of the depressions is 1 um to 4 um.

3. A member having a metal layer according to Claim 1, Oda et al. show wherein the number of the depressions is 1 to 4 per linear 15 um on the surface of the member.

4. A member having a metal layer according to Claim 1, Oda et al show wherein the anchor layer is composed of Ni and at least one of P and B.

5. A member having a metal layer according to Claim 1, Oda et al. show wherein the metal layer contains Au.

6. A member having a metal layer according to Claim 1, Oda et al. show wherein a thickness of the anchor layer is at least 1 um.

7. A member having a metal layer according to Claim 1, Oda et al. show wherein a thickness of the metal layer is at least 50 nm.

10. A member having a metal layer according to Claim 1, Oda et al. show wherein the member is composed of silicon and further comprises an oxide layer on a surface thereof (see column 16, lines 1-40).

Claim 8, **insofar as it can be understood**, is rejected under 35 U.S.C. § 103(a) as being unpatentable over Frye et al. (U.S. Patent # 5,481,205) in view of Gentsu (U.S. Patent # 5,889,914).

Frye et al. show the features of the claimed invention as detailed above, but fail to explicitly show wherein the member is a quartz ferrule.

Lu et al. is cited for showing supported nickel catayst for synthesis gas preparation. Specifically, Lu et al (figures 1 to 7) specifically figure 5 discloses quartz tube can be sealed by using a PTFE ferrule and it can be fixed together with the stainless steel adapter and the male connector, and then this part can be fixed with the stainless steel tube jacket by the adjustable female fixing nut where an O-ring is used for sealing for the purpose of supporting nickel catalyst suitable for the production of synthesis gas.

8. A member having a metal layer according to Claim 1, the combinaiton with Lu et al. showing wherein the member is a quartz ferrule.

Therefore, it would have been obvious to one of ordinary skill in the art to use Lu et al.'s member to modify Frye et al.'s member for the purpose of supporting nickel catalyst suitable for the production of synthesis gas.

Claim 8, **insofar as it can be understood**, is rejected under 35 U.S.C. § 103(a) as being unpatentable over Oda et al. (U.S. Patent # 6,670,208 B2) in view of Gentsu (U.S. Patent # 5,889,914).

Oda et al. show the features of the claimed invention as detailed above, but fail to explicitly show wherein the member is a quartz ferrule.

Lu et al. is cited for showing supported nickel catayst for synthesis gas preparation. Specifically, Lu et al (figures 1 to 7) specifically figure 5 discloses quartz tube can be sealed by using a PTFE ferrule and it can be fixed together with the stainless steel adapter and the male connector, and then this part can be fixed with the stainless steel tube jacket by the adjustable female fixing nut where an O-ring is used for sealing for the

purpose of supporting nickel catalyst suitable for the production of synthesis gas.

8. A member having a metal layer according to Claim 1, the combinaiton with Lu et al. showing wherein the member is a quartz ferrule.

Therefore, it would have been obvious to one of ordinary skill in the art to use Lu et al.'s member to modify Oda et al.'s member for the purpose of supporting nickel catalyst suitable for the production of synthesis gas.

Initially, and with respect to claim 9, note that a "product by process" claim is directed to the product per se, no matter how actually made, In re Hirao, 190 USPQ 15 at 17 (footnote 3). See also In re Brown, 173 USPQ 685; In re Luck, 177 USPQ 523; In re Wertheim, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); In re Fitzgerald, 205 USPQ 594, 596 (CCPA); In re Marosi et al., 218 USPQ 289 (CAFC); and most recently, In re Thorpe et al., 227 USPQ 964 (CAFC, 1985) all of which make it clear that it is the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that, as here, an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not. Note that Applicant has burden of proof in such cases as the above case law makes clear.

Claim 9, **insofar as it can be understood**, is rejected under 35 U.S.C. § 103(a) as being unpatentable over Oda et al. (U.S. Patent # 6,670,208 B2).

As to the grounds of rejection under section 103, see MPEP § 2113.

Claim 9, **insofar as it can be understood**, is rejected under 35 U.S.C. § 103(a) as being unpatentable over Frye et al. (U.S. Patent # 5,481,205).

As to the grounds of rejection under section 103, see MPEP § 2113.

Initially, it is noted that the 35 U.S.C. § 103 rejection based on an anchor layer and a metal layer deals with an issue (i.e., the integration of multiple pieces into one piece or conversely, using multiple pieces in replacing a single piece) that has been previously decided by the courts.

In Howard v. Detroit Stove Works 150 U.S. 164 (1893), the Court held, "it involves no invention to cast in one piece an article which has formerly been cast in two pieces and put together...."

In In re Larson 144 USPQ 347 (CCPA 1965), the term "integral" did not define over a multi-piece structure secured as a single unit. More importantly, the court went further and stated, "we are inclined to agree with the solicitor that the use of a one-piece construction instead of the [multi-piece] structure disclosed in Tuttle et al. would be merely a matter of obvious engineering choice" (bracketed material added). The court cited In re Fridolph for support.

In re Fridolph 135 USPQ 319 (CCPA 1962) deals with submitted affidavits relating to this issue. The underlying issue in In re Fridolph was related to the end result of making a multi-piece structure into a one-piece structure. Generally, favorable patentable weight was accorded if the one-piece structure yielded results not expected from the modification of the two-piece structure into a single piece structure.

Claims 1, 2 and 5, **insofar as they can be understood**, are rejected under 35 U.S.C. § 103(a) as being unpatentable over Frye et al. (U.S. Patent # 5,481,205).

1. Frye et al. (figure 1) show a member **(20)** having a metal layer **23**, the member mainly composed of one of silicon and silicon oxide **21**, comprising: a plurality of overhanging depressions **(see column 3, lines 50 to column 4, lines 10)** created on a surface of the member; an anchor layer **23** formed by filling the depressions; and a metal layer **23** formed on the anchor layer.

5. A member having a metal layer according to Claim 1, Frye et al. show wherein the metal layer **23** contains **Au (see column 5, lines 36-38).**

Therefore, it would have been obvious to one of ordinary skill in the art to use the anchor layer and the metal layer as "merely a matter of obvious engineering choice" as set forth in the above case law.

2. A member having a metal layer according to Claim 1, Frye et al. fail to show show wherein a depth of the depressions is 1 um to 4 um. Frye et al. does discloses that each V-groove **typically** has a vertical depth of **approximately** 10 micrometer deep in the silicon substrate (see column 3, lines 50-column 4, lines 10). However, Frye et al. does provide, although the invention has been described in detail in terms of a specific embodiment, various modifications can be made without departing from the scope of the invention (see column 5, lines 9-35). Note that the specification contains no disclosure of either the critical nature of the claimed dimensions or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen dimensions or upon another variable recited in a claim, the Applicant must show that the chosen dimensions are critical. In re Woodruff, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

Therefore, it would have been obvious to one of ordinary skill in the art to use the teaching of Frye et al.'s depth of the V-grooves for the purpose of programming electrically programmable electronic devices.

The listed references are cited as of interest to this application, but not applied at this time.

Field of Search	Date
U.S. Class and subclass: 257/753,766,77,103,E33.035,80 438/118 385/137,65,71,80,83,49 324/757,739	8/4/04
Other Documentation: foreign patents and literature in 257/753,766,77,103,E33.035,80 438/118 385/137,65,71,80,83 324/757,739	8/5/04
Electronic data base(s): U.S. Patents EAST	8/5/04

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander O Williams whose telephone

number is (571) 272 1924. The examiner can normally be reached on M-F 6:30-7:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (571) 272 1915. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AOW
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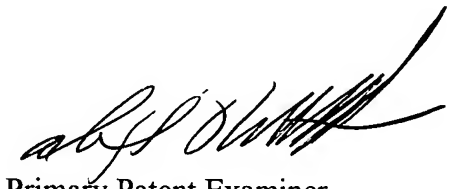

Primary Patent Examiner
Alexander O. Williams